

PLURAL-STORY BUILDING STRUCTURE WITH FLOOR-BYPASS UTILITIES INFRASTRUCTURE

Cross-Reference to Related Application

This application claims priority to currently pending U.S. Provisional Patent Application Serial No. 60/499,477, filed February 23, 2003, for “Overhead, Hidden Building Conduit Infrastructure”. The contents of that provisional case are hereby incorporated herein by reference. The inventorship in this prior-filed case is the same as in the present case.

Background and Summary of the Invention

This invention relates to mixed-use building structure, and more specifically to such structure which includes, immediately over a selected lower floor (story), such as a ground-level floor, a unique, overhead sub-story that accommodates a utilities-conduit bypass of that lower floor. This bypass condition creates a situation wherein the internal volume, or space, in the bypassed lower floor can be defined by a full, unoccluded plate-height which, in turn, can allow for the finishing and renting, for example, of useable lower-level occupancy space early in the process of building construction. Plate-height in this space, i.e., that vertical dimension in the space which extends from floor plane to ceiling plane (also referred to herein as a continuum), is unoccluded in the sense that no utilities-conduit structures, such as water pipes, gas lines, electrical conduits, etc., ever extend directly into the space, and through the ceiling plane, in the context of providing utility services to building floors which are above that lower-level story.

For the purpose of providing a first, specific illustration herein, and only for that purpose, such lower-level space is described specifically in the mode of being ground-

level space with respect to which the present invention has been found to offer particular utility.

In conventional practice, utility conduit structures of the types just mentioned above are most often very much present in this kind of ground-level space, and they typically reside in a plainly exposed condition beneath the ceiling plane which defines, essentially, the upper limit of the interior of such ground-level space. As pointed out above, the ultimate presence of such overhead, exposed utilities structure in the ground-level space occludes full, open plate-height, and can make the resulting ground-level space somewhat less than fully desirable for retail-business occupancy. In addition, ground-level space completion is usually held up until upper, overhead stories are finished enough to permit full installation and completion of various utilities-conduit infrastructure that supports such overhead stories -- which infrastructure will conventionally have componentry disposed within the ground-level space.

A common form of popular mixed-use building construction features a marriage between (a) lower-level (such as ground-level), commercial (such as retail) occupancy space, and (b) overhead, residential space. The present invention will be described in this context, and in particular in a context where the illustrative lower-level space is specifically ground-level space. In typical projects of this nature, a great deal of time passes before any occupancy is permitted to, or can, take place. Despite the fact that lower, ground-level space is usually brought to near completion early in a project, as was mentioned briefly above, full completion must usually await the ultimate installation of various utilities infrastructures of the kind that extend upwardly through a building to supply needed utility services to all upper floors in the building. For example, late in

many building projects, utilities structures, such as those mentioned above, are installed. Their installation typically involves a continuation of construction within the lower, ground-level space -- often with the need for break-through or pass-through activity regarding vertical penetration, or piercing, between ground-level and immediately above space, and often with a resulting condition that involves the permanent presence, and related space-occupancy, just below ground-level ceiling structure, of pipes, conduits, etc. needed for final building completion.

Given the fact that such lower-level commercial space may be relatively easy to fill, and that an income stream from lower-level occupancy early in a building project could be very helpful in beginning to recover investment in construction costs, it is desirable to prepare and have such space early available for full-occupancy use, even while much ongoing overhead construction of residency space is still occurring and in the offing.

The present invention significantly addresses this issue.

In accordance with a preferred embodiment of the invention, the invention deals with this issue by proposing a building-construction approach whereby a full, normal floor-to-ceiling-height, lower-level (often ground-level) volume of space is topped by an uninterrupted, and not later to be interrupted, ceiling-structure continuum through which no utility structures extend. This ceiling structure, rather, generally defines the underside of the base of an appropriately vertically shallow, overhead, laterally perimetered volume of space, wherein low-elevation utility structures are placed, contained and hidden, with no requirement remaining for any further, near-ceiling construction within the lower-level space. Preferably, the overall inside height of this overhead space, also referred to

herein as a utilities-containment space, is such that it readily permits human entrance and maneuvering in it. It can be thought of as taking the form generally of a generous overhead crawl space -- say two to four feet high. It can be taller, of course, if desired.

Appropriate perimeter drainage is furnished for this “overhead” utility space, and, except for a necessary lateral accommodation of such drainage, a moisture-proof barrier preferably lines the floor and the latterly inwardly facing surfaces of the overhead utility space to protect the underlying ground-level space from moisture. All of this can readily be constructed without requiring penetration of the ceiling structure of the ground-level space.

In a modified form of the invention, laterally outwardly extending lateral regions of the overhead utility space can even later be filled with earth to support outside planting, and exposure of decorative plant material along the outer side of a building, thus to give a finished building an aesthetically pleasing appearance which somewhat outwardly masks the internal intention of this added utilities space.

Early commercial occupancy in such utilities-bypassed lower-level space is thus clearly permitted.

The various important features and advantage of the invention will now become more fully apparent and understood as the preferred-embodiment description of the invention which now follows is read in conjunction with the accompanying drawings.

Description of the Drawings

Fig. 1 is a simple, fragmentary, isometric view of a multi-story (three are shown) building which includes a utilities-containment space (shaded for emphasis) constructed

and positioned according to a preferred embodiment of the present invention, and located intermediate the ground-level (lower-level) and second stories of the building.

Fig. 2 presents an enlarged, fragmentary detail taken generally along line 2-2 in Fig. 1.

Fig. 3 provides another enlarged, fragmentary detail much like that pictured in Fig. 2, but here showing a modified form of the invention.

Fig. 4 is a simplified and fragmentary side elevation of a plural-story building which includes a utilities-containment space disposed immediately above one of the lower floors in the building, but not necessarily the ground floor in the building.

Detailed Description of the Invention

Turning now to the drawings, and referred first of all to Figs. 1 and 2, indicated at 10 is, a plural-story building structure, fragmentarily shown, which is under construction. For useful illustration purposes, structure 10 is to become, when completed, a mixed-use building including ground-level, or ground-floor, commercial retail space, and upper level (second story and above) residential space. It should be understood that this illustrative, mixed-use character for building 10 is just a representative illustration of a building being constructed in accordance with one preferred embodiment of the present invention.

Building 10, at least as so far constructed as pictured in Figs. 1 and 2, includes three stories, or floors, 12, 14, 16. Story 12 is at ground level -- rising from a suitable foundation 18. Story 14 is a second story. Story 16 is a third story. Appropriate column structure (C) and beam structure (B) makes up a building frame (F). Since the specific

details of these beam and column structures form no part of the present invention, only simple, schematic representations of them are provided in the drawing figures.

Each of stories, 12, 14, 16 has what may be thought of as a normal, single-story height H_1 , (shown just for stories 12, 14 in the figures). Within each of these stories, respective volumes therein of “open space” are effectively defined, at least in part, or will be so defined when finished with floor and ceiling expanses (also referred to as continuums), by what is referred to herein as a normal, single-story, plate height, shown at PH for stories 12, 14 in Figs. 1 and 2.

In the constructed condition of building 10 as shown in Figs. 1 and 2, ground story 12 is essentially in a condition, in accordance with the present invention, sufficient for independent completion to allow for tenant occupancy to take place irrespective of the still basically incomplete conditions of upper-level, overhead stories, such as stories 14, 16. It is in this specific kind of setting that the present invention offers special utility.

Thus, in accordance with a preferred embodiment of the present invention, vertically interposed floors 12, 14, in the form of what is referred to herein as a sub-story with an overall height indicated generally at H_2 in Figs. 1 and 2 is a utilities-conduit containment space 20. Preferably, the internal volume of space 20 has an effective overall internal height, shown at H_3 in Fig. 2, which accommodates relatively easily human entrance and maneuvering within the space for reasons which will be explained shortly. for example, high H_3 might be in the range of about three to four feet to allow space 20 to operate much like a crawl space (overhead, of course); or it might be made with a larger height if desired to allow for a person substantially to stand upright within space 20. This height H_3 is a matter of building-designer choice.

Utilities-containment space 20 is perimetally bounded by a structure, such as a wall structure shown at 22 in Fig. 2, and the base and side walls of the inside of space 20 are lined with an appropriate moisture-barrier lining material which is shown as a thick darkened line 24 in Fig. 2. From the fragmentary showing of portions of building 10 as such appear in Fig. 2, one can see that liner 24 extends as an expanse across the base of space 20, upwardly along the side wall structure, and then laterally outwardly over this side wall structure. The exact configuration for a liner, such as liner 24, is not specifically part of the present invention. What is important, however, is that this liner structure effectively seal the inside of space 20 against any leakage of moisture downwardly into underlying ground-level story 12.

The upper extent of space 20 is effectively defined by the underside of appropriate beam and floor structure, such as that shown generally at 26 in Fig. 2, which beam and floor structure effectively defines the underside of overhead story 14.

It is sub-story, or utilities-containment space, 20 which plays a significant role in defining the presence and utility of the present invention in building 10. This utilities-containment space, with its internal height H_3 , also referred to herein as being less than a full plate height, allows for the concealed installation in this space of various utilities-conduit structure, such as the components generally pointed to by arrow 28 in Fig. 2. Appropriate external connections to this utilities-conduit structure, collectively referred to herein as a connection adaptation, are furnished from outside building 10, and specifically outside the internal volume of ground floor 12, as is generally indicated by the two dash-double-dot lines 30 in Fig. 2, and by a single thick-lined darkened arrow bearing the same reference numeral 30 in Fig. 1. Lines and arrow 30 represent both the

above-mentioned connection adaptation, and also structure referred to herein as supply-input portions of the utilities-conduit structure.

An important consequence of this arrangement, with containment space 20 provided, is that utilities services for the upper stories in building 10, i.e., those full stories, such as stories 14, 16, which are disposed above ground-level story 12, effectively bypass the internal volume of the ground-level story, leaving that story and its internal space in a condition with what is referred to herein as an unimpeded full plate height PH. There is no penetration through the ceiling structure of ground-floor 12 to accommodate the supply of various utilities services to overhead stories. As a consequence, once a finishing ceiling and surfacing floor are furnished in the internal volume of story 12, which activities can certainly take place very early in the overall construction of a building, such as building 10, it is possible for substantially full completion of the interior of ground floor 12 to take place, thus to enable early renting, etc. of this space to commercial occupiers. In other words, the entire ground story of a building, and specifically a building incorporating the present invention, can be made available as an income-producing asset early in overall building construction.

Indicated generally at 32 in Fig. 1, by a darkened line, is appropriate liquid drainage structure which is furnished in any suitable manner to drain any fluid which develops within space 20 downwardly and outwardly of the building, and again, without entering the internal volume of ground-story 12.

Fig. 3 in the drawings shows one modified form of the invention, wherein sub-story 20 is formed with an outward lateral extension, such as that generally pointed to in

Fig. 3 at 20a which extension can function, for example, as a planting space filled with soil for the planting of various decorative plant materials.

Fig. 4 illustrates at 34, and just very schematically, a plural-story building including full-height stories 36, 38, 40, 42, with a utilities-containment sub-story 44 provided between a relatively lower story 36 and a relatively higher story 38. Because of the presence and location of sub-story 44, at least lower story beneath sub-story 44, is bypassed by utilities conduit structure. This figure illustrates the fact that it is certainly possible to incorporate a utilities-containment space sub-story at any chosen location within a building regarding which it is desired to have the volume of the story lying beneath that sub-story free and clear of any intruding utilities-conduit structure.

One way of visualizing the nature of building 34 is to recognize that two normally vertically stacked stories, such as stories 38, 40, exhibit substantially a normal two-story height, indicated at H_4 in Fig. 4. By contrast, the two vertically displaced stories 36, 38 which are interposed by sub-story 44 has a slightly larger “two-story” height, indicated at H_5 in Fig. 4.

Thus the present invention proposes a unique and extremely useful way to make the ground story, or any chosen lower story, in a multi-story building completeable for occupancy and use well before the entire associated building is completed. The sub-story proposed by the present invention effectively acts as a bypass relative to structure beneath it for utilities services which are to be extended upwardly to upper stories.

Accordingly, while a preferred embodiment of the invention, and two modified forms thereof, have been described herein, it is appreciated that other variations and modifications may be made without departing from the spirit of the invention.